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Secretary of the Army visits AMC

By Melissa Bohan
U.S. Army Materiel Command
Public Communications Office

While visiting the Army Materiel Command headquarters March 22, the Secretary of the Army Francis Harvey challenged AMC to look for benchmarks -- ways to compare its products and processes with industry to find the best ways to meet the needs of Soldiers.

"Since I've come from the other side, I'm a big believer in competition. This equipment is important to Soldiers -- let's get it out to them," said Harvey, speaking about his past experience in the corporate world.

Harvey's visit began with video teleconference briefings from AMC's major subordinate commands where each of the commanders explained what they do, ways they are supporting Operations Iraqi and Enduring Freedom, and partnerships they have created with industry and academia. Each also mentioned ways they are using industry best practices to help save money, increase production and improve the quality of equipment for Soldiers.

For the second time in as many weeks, AMC Forward --Southwest Asia in Kuwait briefed the secretary on their mission and accomplishments. While visiting the Coalition Forces Land Component Command March 16, the secretary saw some AMC SWA operations firsthand, including a Forward Repair Activity where depot personnel are fixing vehicles and providing repair parts to Soldiers.

"We were able to show the secretary our Mobile Parts Hospital, our engine repair capability and how we have incorporated Lean Six Sigma practices to improve our ability to apply add-on armor kits. The secretary saw the different types of armor kits [trucks and HMMWVs] and met the Soldiers who operate the equipment," said Brig. Gen. Kevin Leonard, who is dual-hatted as the commanding general, AMC Forward-SWA and CFLCC C-4.

"I appreciate all the work you're doing over there [Southwest Asia]. It's a great way to get feedback from our Soldiers -- from the field back to the lab. Let's do everything we can to protect them," said Harvey.

Harvey then visited the Research, Development and Engineering Command's Night Vision and Electronic Sensors Directorate to see demonstrations of some of the latest technologies AMC is developing to increase Soldier survivability. Two of the demos included the Future Force Warrior, the only Soldier-centric, network-enabled system of systems approach that treats the Soldier as a platform, complete with a specialized uniform, body armor and wearable computer, and an airborne IED/mine detection system that uses "change detection" imagery to spot changes in surveillance images so that Soldiers can better spot a potential threat.



Secretary of the Army, Francis Harvey is greeted by AMC Deputy Commanding General, Lt. Gen. Richard Hack (left) and RDECOM Commander, Brig. Gen. Roger A. Nadeau, at a recent visit to Fort Belvoir, Va., to discuss the latest technologies.

Army approves new long-range .50 Cal

By Kathy Roa
ARDEC Public Affairs

The Army has approved its new long-range .50 caliber sniper rifle, the M107, for full materiel release to Soldiers in the field.

The M107 program is managed here by the Project Manager Soldier Weapons with engineering support provided by Picatinny's Armament Research, Development and Engineering Center.

The term "full materiel release" signifies that the Army has rigorously tested and evaluated the item and determined that it is completely safe, operationally suitable and logistically supportable for use by Soldiers. Product Manager for Crew Served Weapons Lt. Col. Kevin P. Stoddard said that PMSW previously equipped combat units in Afghanistan and Iraq, as well as other units supporting the Global War on Terrorism, with the M107 under an urgent materiel release.

The Army expects to complete fielding of the M107 in 2008, Stoddard said.

The M107 was funded as a Soldier Enhancement Program to type classify a semi-automatic .50 caliber rifle for the Army and other military services. It underwent standard type classification in August 2003. A production contract was awarded to Barrett Firearms Manufacturing, Inc., Murfreesboro, Tenn., the following month.

Compared to the M24 7.62mm Sniper Rifle, Stoddard said, the M107 has more powerful optics and fires a variety of .50 caliber munitions.

"This provides sniper teams greater capability to identify and defeat multiple targets at increased ranges," he explained.

The M107 is based on the Marine Corps Special Application Scoped Rifle, the M82A3.

The M107 enables Army snipers to accurately engage personnel and material targets out to a distance of 1,500 to 2,000 meters respectively, he said.

The weapon is designed to effectively engage and defeat materiel targets at extended ranges including parked aircraft, computers, intelligence sites, radar sites, ammunition, petroleum, oil and lubricant sites, various lightly armored targets and command, control and communications.

In a counter-sniper role, the system offers longer stand-off ranges and increased terminal effects against snipers using smaller-caliber weapons.

The complete system includes the rifle itself, a detachable 10-round magazine, a variable-power day-optic sight, a transport case, a tactical soft case, cleaning and maintenance equipment, a detachable sling, an adjustable bipod and manuals.

The Army plans to modify the M107 in the future by adding a suppressor to greatly reduce flash, noise and blast signatures.

PM Soldier Weapons manages crew-served and individual weapons for the Army. It is one of three centers of excellence reporting to the Program Executive Office Soldier located at Ft. Belvoir, Va.



A Soldier tests out the Army's new long-range .50 caliber sniper rifle.

Picatinny manages purchase of new howitzers for Army, Marines

By Martin Kane
ARDEC Public Affairs

A joint-service program office here at Picatinny has completed development and is managing the purchase of 589 new lightweight 155mm howitzers for the Marine Corps and the Army, a spokesperson for both services announced. An \$843 million four-year contract has been awarded to BAE Systems, of Barrow-in-Furness in the United Kingdom, to manufacture the weapons and 94 digital fire-control retrofit kits, according to Jim Shields, deputy program manager for the lightweight 155mm howitzer program. Shields said that the howitzer is known as the M777A1 howitzer in the services' inventories.

"The M777A1 will replace all of the corps' current M198 towed howitzers and will be the artillery system for the Army's Stryker Brigade Combat Teams," he said.

As the first ground combat system to make extensive use of titanium in its major structures to trim weight, the M777A1 is 7,000 pounds lighter than the weapon it replaces.

The weight reduction improves transportability and mobility without impacting range or accuracy, and the system is compatible with the entire family of 155mm ammunition, Shields said.

The new howitzer is transportable by the Marine Corps' MV-22 tilt-rotor aircraft and two can fit on the C-130.

Currently, BAE Systems is manufacturing 94 howitzers under a low-rate initial production contract, he said. The first 94 weapon systems will be equipped with an optical fire control system that will be upgraded to incorporate digital fire control under the full production contract, he said.

All 495 full-production units will be manufactured with digital fire control systems also known as towed artillery digitization or TAD.

The 3rd Battalion, 11th Marine Regiment, located at Twentynine Palms, Calif., will be the first unit fully equipped with the weapon.

Shields said that BAE Systems facility in Hattiesburg, Miss., is assembling the howitzer.

"Approximately 80 percent of the howitzer's components are built in the U.S.," he said. "We utilize a supply chain that spreads across 10 states, the U.K., Canada and Italy." The Army's Watervliet Arsenal in Watervliet, N.Y., manufactures the cannon assembly, he said.

According to Shields, the weapon underwent a successful joint-service operational test during October 2004 at Twentynine Palms. During the four-week test, nearly 12,000 artillery rounds were fired by four M777A1s.

The system demonstrated high reliability, met or exceeded all its operational



Fort Bragg, N.C., Soldiers fire the 155mm howitzer that is capable of firing the Army's Excalibur precision-guided projectile to a range of 40 kilometers. Because of the Excalibur's Global Positioning System and inertial navigation guidance, it will deliver precision strike capability to within less than 10 meters at all ranges. (Photo courtesy BAE Systems)



Marines fire the new lightweight 155mm howitzers. A Picatinny joint-service program office will manage the purchase of 589 of the howitzers for the Marine Corps and the Army. (Photo courtesy BAE Systems)



requirements, and a team of independent evaluators determined the M777A1 was both operationally suitable and effective.

The M777A1 will be capable of firing the Army's Excalibur precision-guided projectile that is also under development here at Picatinny.

Excalibur will be fired out to a range of 40 kilometers from the M777A1, and because of its GPS and inertial navigation guidance, will deliver precision strike capability (less than 10 meters CEP) at all ranges. Excalibur is scheduled to be fielded in late 2006 when the Army starts taking delivery of its first M777A1s.

Science on the battlefield

*By Staff Sgt. Lorie Jewell
Special to RDECOM*

ARMED robots, liquid body armor, bendable computer screens and uniforms with virtual-reality capabilities — what once could have been fodder for science-fiction novels is now shaping how future Soldiers will fight.

Many of the ideas and technologies that are already being used on today's battlefield, or are due to arrive soon, were being displayed and discussed at this year's Army Science Conference.

One such system, the Special Weapons Observation Reconnaissance Detection System, or SWORDS, will be joining Stryker Brigade Soldiers in Iraq after final testing, said SSG Santiago Tordillos of the Explosive Ordnance Disposal Technology Directorate of the Army's Armament Research, Development and Engineering Center at Picatinny Arsenal, N.J.

"We're hoping to have these systems in Iraq by early 2005," Tordillos said. "The Soldiers I've talked to want them yesterday."

A New Robot Fighter

The SWORDS system consists of a weapon system mounted on a Talon robot, a product of the engineering and technology development firm Foster-Miller. The Talon began helping with military operations in Bosnia in 2000, deployed to Afghanistan in early 2002 and has been in Iraq since the war started, assisting with improvised explosive device detection and removal. Talon robots have been used in about 20,000 missions in Iraq and Afghanistan, according to Foster-Miller reports.

"It's not a new invention, its just bringing together existing systems," said Tordillos, who has been involved with the project since its inception about a year and a half ago.

Different weapons can be interchanged on the system — the M-16, the M-2, M-240 and M-249 machine guns, or the M-202A1 with a 66mm rocket launcher. Soldiers operate the SWORDS by remote control from up to 1,000 meters away.



With a weapons platform mounted on a Talon robot, the SWORDS system allows Soldiers to fire small arms by remote control from as far away as 1,000 meters. The system may soon be used in Iraq. (Photos by Staff Sgt. Lorie Jewell)

"In testing, it's hit bulls eyes from as far as 2,000 meters away. The only margin of error has been in sighting," Tordillos said.

The system uses AC power, lithium batteries or SINCGARS rechargeable batteries. The control box weighs about 30 pounds, and has a daylight-viewable screen and two joysticks that control the robot platform and the weapon.

Four SWORDS currently exist, and 18 have been requested for service in Iraq, Tordillos said. Each system costs about \$230,000 to produce, said Bob Quinn, lead integrator for the project. When they go into production, Quinn estimates the cost per unit will drop to \$150,000 to \$180,000.

Tordillos fielded a variety of questions while showing off the system at the conference. Soldiers wanted to know what MOS they need in order to work with the system. There is no specific MOS for it, Tordillos said.

Others asked if Tordillos envisions a time when armed robots will outnumber humans on the battlefield.

"You'll never be able to eliminate the Soldier on the ground," he said. "There will be a mix, but there will certainly always be Soldiers out there."

Sensor-based Soldiers

Thermal sensors woven into the fabric of the uniform control its temperature, based on the Soldier's environment. An on-board respirator, tethered to the Soldier's back, provides a continuous supply of fresh air – eliminating the need for a protective mask. Should the Soldier have the visor up, or the helmet off, and breath in some kind of harmful agent, the uniform sensor would immediately detect it, release tiny embedded capsules to counter it and inject treatment into the Soldier's body.

From the waist down, a skeletal system will allow Soldiers to carry two or three times their body weight.

Liquid Armor Protection

The uniform might be made out of fabric treated with another technology featured during the conference, shear thickening fluid. Unofficially referred to by some as liquid body armor, STF is made of equal parts polyethylene glycol – an inert, non-toxic thickening agent used in a variety of common products, including ice cream – and miniscule glass particles, said Eric Wetzal, who heads the STF project team in the Weapons and Materials Research Directorate of the U.S. Army Research Laboratory.





In a small glass vial, the light blue liquid is easily stirred with a small plastic stick – as long as the stick is moving in slow, easy motion. When rapid or forceful motion is applied, the liquid instantly hardens, preventing any movement.

STF has been applied to regular Kevlar material, Wetzel said. The fabric's texture doesn't change; it looks and feels the same as if it hadn't been treated. Using a test swatch of four layers of untreated Kevlar – the normal thickness of body armor – Wetzel is able to stab an ice pick through the fabric. But when stabbing a treated section of fabric with all the force he can muster, the ice pick dents the fabric but can't penetrate it.

Research is being done into whether STF can be of use to the Army, Wetzel said. If it is, Soldiers may start getting gear treated with it in about two years.

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Warriors in 2025?

Staff Sgt. Raul Lopez, an infantryman stationed at the Natick Soldier Center in Massachusetts, spent four days during the conference in what could be the Army uniform of the future.

Dressed in black and wearing a helmet that allowed barely a glimpse of his face, Lopez looked like something from a science-fiction movie.

He explained that the fabric of the form-fitting suit would be made through the wonder of nanotechnology, which involves manipulating atoms and molecules to create things at a scale about 50,000 times smaller than the diameter of a strand of hair. Soldiers wearing the suit would have the ability to blend into any environment, like chameleons.





The helmet he wore is envisioned as the main hub of the uniform, where “all of the action happens,” Lopez said. A tiny video camera on the helmet provides 360-degree situational awareness. A series of sensors gives the Soldier three-dimensional hearing and the ability to amplify specific sounds, while lowering the volume of others.

Complete voice translation is also provided for what Soldiers hear and say. Night-vision sensors, minimized to the size of pencil erasers, are also in the helmet. Maps and other situational-awareness information are projected on the inside of the visor, while everything the Soldier sees and hears is sent in real time up to higher headquarters.

“It’s all voice activated,” Lopez said. “I can tell it to show me where my buddies are, and it projects the information on the visor.”
(Jewell originally wrote this article for the Army News Service and Soldiers Magazine)

Sgt. Major of Army visits Soldier Systems Center

NSC Public Affairs

Sergeant Major of the Army Kenneth Preston visited the U.S. Army Soldier Systems Center here recently, touring many of the facilities.

Preston's visit to Massachusetts also included areas of military interest at Massachusetts Institute of Technology.

During his time at the Soldier Systems Center, he was oriented with the overall mission before receiving a briefing on Future Force Warrior and overviews on Army uniforms, airdrop equipment, ballistic protection advances and Special Operations Forces projects.

The facilities and projects of the Natick Soldier Center, U.S. Army Research Institute of Environmental Medicine and Product Manager-Force Sustainment Systems were represented during the tour.

He saw the design and prototype, camouflage evaluation and textile performance testing facilities. Other stops were at the footwear performance lab, anthropometric 3-D scanning, biomechanics lab and climatic chambers.

Explanations of biomedical modeling and thermal studies were part of the visit at ARIEM, where he saw the bone health and hypoxia labs. Force Provider, cargo airdrop, heaters and the Containerized Kitchen were all shown or discussed at the PM FSS briefing.

At the Combat Feeding Directorate, he learned about the combat ration continuous product improvement program, and science and technology initiatives.

"During my career as a Soldier, the improvements to combat rations have been magnificent," Preston said, after sampling some of the rations. "I appreciate all you're doing for warfighters."

For more information about the Soldier Systems Center, please visit our website at: <http://www.natick.army.mil>.

New Picatinny firing range laboratory nears completion, serves as live-fire environmental technology test platform

By John Cefaloni
ARDEC Public Affairs

Over the past few months, workers have been busy in the north end of building 3310 to make way for a new 25-yard indoor live-fire pistol and shotgun range. The range is being constructed as part of the Army's on-going RangeSafe program managed by the Armament Research, Development and Engineering Center's Environmental Technology Division.

The RangeSafe Technology Demonstration Initiative program has successfully conducted a number of firing range related technology demonstrations throughout the United States over the past several years.

Recently, the New Jersey Department of Environmental Protection recognized these efforts as the RangeSafe program was presented with the 2003 NJDEP Environmental Excellence Award for Innovative Technology.

Past demonstrations have been conducted on existing firing ranges at active Army training sites. Setting up and conducting technology demonstrations requires a disruption of mission-related training operations, often for many months. The Army has no firing ranges built for the purpose of evaluating innovative range improvement technologies in a controlled environment, while being subjected to real-life training and qualification use. Picatinny's new gun range is specifically designed to be a live-fire laboratory test-bed enabling the pilot-scale study of innovative technologies aimed at improving the human health, safety and environmental impacts of both indoor and outdoor live-fire gun ranges. The indoor range laboratory operates as a base platform consisting of concrete walls and floor with an adjustable steel plate that holds the impact media.

On the testing platform are placed removable materials and equipment, such as impact media and baffles. The modular design enables the testing of a wide variety of emerging range improvement technologies such as various types of improved bullet-impact media, impact-media dust suppression, berm-water-runoff capture and treatment, best management practices for bullet-fragment recovery and recycling, analysis and mitigation of air emissions and noise, and evaluation of alternative baffle materials, including lightweight composites and emerging nano-material composites.

The indoor range lab will be used in conjunction with other test apparatus to safely evaluate technology performance in an outdoor environment. Outdoor lysimeters will be used to determine the effects of outdoor weathering on fired-upon impact-berm material, to examine the efficacy of bioaccumulators and soil stabilizers, and to study the effects of mixed contaminants, including mixed heavy metals.

Building 3310 currently houses a defunct gun range that has been inoperative for years because of the accumulation of lead dust which poses a hazard to users. The Range-safe project cleaned the residual lead-dust contamination and is making structural improvements to the building. Aside from technology demonstration features, the range will also include a new air-handling system to comply with the latest industrial hygiene standards, new shooting booths, a remote target retrieval system and range master office.

It is anticipated that the range will be used by the Picatinny Police, as well as Picatinny resident Marine Corps Reserve Company G, to train and qualify with pistols while providing the projectiles needed to demonstrate relevant range technologies. To accommodate



These firing points are at Picatinny's new state of the art indoor firing range and environmental technology test bed. The new Picatinny firing range laboratory is near completion. The range will serve as live-fire environmental technology test platform. (Photo by John Cefaloni)



this dual use, the range is being lengthened. The distance to target of the former range was only 15 yards -- which is insufficient to accommodate the Picatinny Police standard pistol qualification distance of 25 yards.

As with other Range-Safe projects, data and reports of successful technology demonstrations will be shared with regulatory partners including the Environmental Protection Agency Region 2, the NJDEP Office of Innovative Technology and Market Development and the Interstate Technology Regulatory Council -- a national regulatory cooperation that facilitates widespread regulatory acceptance of new environmental technologies.

"This range will establish the state's definitive position with respect to firing-range technologies and has the strong backing of the New Jersey Department of Environmental Protection," said Robert Mueller, NJDEP Office of Innovative Technology and Market Development and ITRC national co-chairman.

The need for a gun-range technology test bed is confirmed by scientists from the Army Corps of Engineers Engineering Research and Development Center Environmental Laboratory in Vicksburg, Miss. ERDC is a nationally recognized center for environmental research and a partner of the Range-safe program.

"That idea of having a gun-range technology test bed is brilliant. That should have been done a long time ago. The only way you can get new technology into the Army system is to have a working example and be able to demonstrate improvements," said Dr. Philip Malone, ERDC scientist. Transfer of successfully evaluated technologies, materials and practices is the ultimate goal of all research and development efforts; and the indoor range laboratory will help the Army transform and sustain its ranges, fulfilling the Army's new Strategy for the Environment, "Sustain the Mission -- Secure the Future," which was published Oct. 1.

"This new capability will serve as an invaluable tool to help the Army maintain continued access to vital training infrastructure, thereby ensuring the readiness of our warfighters," said James Frankovic, Environmental Technology Division Competency Manager

Combat Feeding Lab expansion begins

Soldier Systems Center-Natick

With three successive swings of the gold-painted sledgehammers, the \$4.6 million Department of Defense Combat Feeding Directorate food laboratory expansion project had officially begun during a ceremony at the Soldier Systems Center, Natick, Mass., March 7.

Brig. Gen. James Moran, commanding general of the Soldier Systems Center; Joe Dalton, district director for Congressman Ed Markey; and Philip Brandler, Natick Soldier Center director, each poked a hole into the X marked at the bottom of the wall of the existing sensory analysis room, which is one of several areas to be improved in the 18,650-foot expansion.

"It seems like 100 years ago when I was the director of the Food Engineering Directorate that we had a dream for a second floor expansion," Brandler said. "I guess what they say is true: Good things come to those who wait."

Funded by the 2003 Defense Appropriations Bill, the project brings 12,859 square feet of lab, with the remaining space set aside for offices, to assist food researchers in developing the best rations for America's warfighters.

"It's been almost 30 years that I've been in the Army, and like Napoleon said, the Army does still travel on its stomach," Moran said. "You have played a principal part in ensuring our Soldiers are the best-fed in the world."

He thanked Markey along with state and local officials who made the project possible. Dalton spoke on behalf of Markey, who was unable to attend.

He said that Markey, working together with Sen. Edward Kennedy and Sen. John Kerry, secured funding for the food lab expansion as well as the money for a new thermal test facility on the installation and are committed to do everything they can to support the Soldier Systems Center.

Referring to the most commonly issued ration developed at Combat Feeding, Dalton coined another name for the MRE-"Morale, Readiness and Energy"-and commented on one newspaper's report on the Meal, Ready to Eat.

"Sounds like there is some world-class bartering that goes on for the products developed here, and each MRE packs quite a punch of nutritional value and fuel for the body," Dalton said. "And maybe, just maybe, this new facility will help solve the most vexing of MRE problems, according to the (Washington) Post story: the perfect slice of pizza."

Several areas will see major upgrades with the goal of delivering ration components of the highest safety, quality and acceptability.

The polymer packaging materials testing lab will enable the Natick Soldier Center to conduct in-house polymer processing trials using leading-edge materials and techniques. Incorporating novel structures, notably nanocomposites materials, into existing and future combat rations will cut packaging weight and waste while enhancing package survivability.

Five modern microbiology labs and an analytical chemistry lab will have state-of-the-art hoods for critical microbiological and chemical analyses. Co-location of microbiologists and food technologists offers the opportunity to increase collaboration and shorten development time.

A new sensory analysis room will have separate stations for thorough and independent assessment of rations for quality and acceptability. Food technologists will be able to provide evaluations of commercial foods and in-house components. Feedback can be rapidly sent to the Defense Logistics Agency to ensure only the best and safest products are issued to warfighters.

For better lab safety, an elevator will simplify transit of liquid gas cylinders between floors.



"It was always a show to watch the propane tanks being hoisted," Brandler said. "Our thanks go to Congressman Markey. He's recognizing that if we're going to continue to develop world-class products, we need world-class facilities."

Construction is scheduled to be completed by April 2006.

For more information about the U.S. Army Soldier Systems Center, please visit our website at:<http://www.natick.army.mil>.

RDECOM Accepts keys to world's first fuel cell military truck

**By Thomas Moyer,
RDECOM Public Communications**

The U.S. Army accepted delivery of the world's first fuel cell-powered truck April 1, at the General Motors Corp. research facility outside Rochester, N.Y.

Marking the occasion were Sen. Hillary Rodham Clinton (D-N.Y.) and Brig. Gen. Roger Nadeau, commanding general of the U.S. Army Research, Development and Engineering Command, Aberdeen Proving Ground, Md.

The modified Chevrolet Silverado, the GMT 800, is equipped with two 94 kilowatt fuel cell stacks, capable of generating 188 kilowatt and 317 foot-pounds of torque, or roughly the motor torque generated by GM's 5.3 liter V-8 engine.

Despite weighing 7,500 pounds, the GMT 800 accelerates in a similar fashion to a V-8 powered production truck, but produces no tailpipe emissions. Fuel cells chemically convert hydrogen into electricity and water. Three 10,000 pounds-per-square-inch compressed hydrogen storage tanks will provide a driving range of 125 miles.

"The relationship between the U.S. government and private industry is a tremendous win-win scenario, because together this technology will come in better and faster, and will have an incredible impact on us in our civilian lives. And I know what it will do to our U.S. military forces," Brig. Gen. Roger Nadeau said.

"My excitement is far beyond what we're about to do with this technology and well into what it's going to do for us as we continue to transform the U.S. Army," he said.

The U.S. Army will evaluate the experimental truck until July 2006 at Fort Belvoir, Va. The vehicle will serve in a non-tactical mode while under evaluation and will not be used in ongoing operations.

Rigorous testing is planned in different climates and locations around the United States to assess performance and give first-hand experience with hydrogen and fuel cells



A General Motors Corp. engineer describes the characteristics of the world's first fuel cell-powered truck before taking Sen. Hillary Rodham Clinton and Brig. Gen. Roger Nadeau on a test drive around GM's research facility in Honeoye Falls, N.Y. (Photo courtesy of General Motors Max Shultz)

ARL school volunteers give boost to elementary school students

*By Stephany Jaramillo,
Army Research Laboratory Public Affairs*

Army Research Laboratory school volunteers hung up their lab coats and headed out to serve as MINDCORE quizmasters at one of ARL's Partners in Education schools, Beltsville (MD) Elementary. There they joined other volunteers from local businesses, civic organizations and local officials to question some very excited and enthusiastic school children who had been preparing for this day when all 958 students, kindergarten through sixth grade, were tested on their knowledge of the 100 questions they were given to study.

Because the school is the largest elementary in Prince George's County, MD, an army of volunteers gathered to administer the 100 questions each student must answer. It's said that it takes a village to raise a child and the Beltsville community and ARL rose to that challenge. More than 120 parents, teachers, administrators, civic leaders and members of the community volunteered their time to test the students. Volunteers from the University of Maryland and Mount St. Mary's College also joined in to lend a hand.

To participate in MINDCORE, students agree to learn 100 facts covering all academic areas required for their grade level. Topics covered include history, geography, math, literature, music, fine arts, health, civics, and helpful general information.

The students hope to beat out their peers and answer any and all questions thrown at them by the volunteers. For each question answered correctly on MINDCORE day, students can raise money from family and friends who have willingly pledged to give a sum of money for each correct answer the students give. MINDCORE serves as a fundraiser. The money accrued by students giving the correct answers buys school equipment such as maps, globes, computers and software that are not funded through the school system.

An important aspect of MINDCORE is the excitement it creates. Pupils explore new ways to learn and study. This learning enables many of them to go on to compete in various higher level county-wide, state-wide, and country-wide academic contests offering trophies, awards and scholarships for their achievements not only bringing recognition for the students but also to their school.

To achieve MINDCORE objectives, volunteers give a good amount of their time to make the program a success. Under the Partners In Education Program, school volunteers are authorized up to two hours of administrative leave per week to participate in the program. Many ARL volunteers put in considerably more time on their own to help students do their best.

"The one on one attention volunteers spend with students gives each of the students an extra boost in raising their expectations for success," said Maggie Schmidt, reading specialist and volunteer coordinator at Beltsville Elementary School. "We greatly appreciate the contribution of the U.S. Army Research Laboratory in supporting our school. We are grateful to the Army for authorizing time off from work and encouraging supervisors to support their staff in participating," she added.



School volunteers quiz enthusiastic Beltsville Elementary School students in the school gymnasium. The money pledged by family and friends for each of their correct answers will raise needed resources for school equipment not funded through the school system, but essential for Beltsville Elementary School to achieve academic excellence

CG signs Law Day Proclamation

By Yvonne Johnson
Special to RDECOM

Brig. Gen Roger A. Nadeau, commander of Aberdeen Proving Ground and RDECOM officially recognized the nation's annual Law Day observance by signing a proclamation in the presence of the installation's legal leaders. Lt. Col. Steven M. Parke, staff judge advocate and Capt. John Lily, legal assistance attorney, witnessed the signing in Nadeau's office March 25.

Nadeau said that the observance is, "a great opportunity for citizens to learn more about the military legal system." "This is another mechanism to be actively involved in our system," Nadeau said. "If you are innocent, you are probably better off coming up on the military side of the house."

Parke agreed, adding that jury duty becomes an appointees' "assignment of duty."

"In the military, it truly is a panel of your peers," Parke said. "They know where you come from."

The Law Day observance will bring together a large contingent of legal practitioners from Harford County, Md., and the federal and military community, Parke said.



Brig. Gen. Roger A. Nadeau, left, Commander of APG and RDECOM, signs the 2005 Law Day Proclamation as Lt. Col. Steven M. Parke, staff judge advocate, looks on. (Photo by Conrad Johnson)

Engineers build more than just robots Working with students fosters development of young engineers

*By Marna Palmer
 NVESD, RDECOM
 Program Information Office*

When the time reads five o'clock, working men and women can be seen fleeing their offices. This is not so for a few dedicated Night Vision and Electronic Sensors Directorate employees. For six weeks this winter, Glen Templeton, John Hodapp, Chris Marshall, Andy Pogany, Andy Hetrick, and Heather Craig could usually be found at NVESD long after the clock has struck five. This is not because of a workaholic supervisor or a project gone wrong, the long hours were completely voluntary. The six have volunteered their time to work with the students of Hayfield's Robotics team in the construction of a competition worthy robot.

This was all part of a program sponsored by FIRST, or For Inspiration and Recognition of Science and Technology, designed to expose high school students to jobs in engineering. The students and engineers work together to design and build a robot using materials given to them by FIRST. The process mimics the every day responsibilities of an engineer as challenges and complications arise. Glen Templeton's, of NVESD's Science and Technology Division, interest was sparked by that aspect. He has been with the program since its inception and in true engineer fashion said, "It's fun coming up with a new design every year to meet the various challenges thrown at us."

This is not the only thing that attracts Templeton and his colleagues. Templeton said the reason he comes back year after year is, "it's a wonderful thing when you are explaining something to one of the students and you see that glimmer in their eye that lets you know that they understand what you are trying to get across to them." Another veteran of the program, Andy Pogany of the Aviation and Netted Sensors Division, added, "I have gotten a sense of personal pride in working with the students and seeing their enthusiasm for the project and how it often times has a profound effect on them. It inspires them to work in careers in engineering and science." John Hodapp, also from the Science and Technology Division, echoed those sentiments, "Over the five years I've been working this I've seen both good and not so good output at times. But in the end, there's always more in the positive column at the end of the day," he says.

Assisting with the project was not just pure selflessness on the behalf of the engineers however. They were just as enthusiastic and passionate about the whole process as the high school students they mentor. One of the things that brought Chris Marshall, of the Science and Technology Division, back for two years in a row is what the children have taught him. "It is invigorating to interact with youngsters who have grown up in the digital age. Some of the ways they approach problems are so different from what I was taught growing up," he explained. Andy Hetrick, an intern in the Ground Combat Systems Division, who returned to work with the program for three years running said, "after participating for the first week there was no turning back. The challenge of it, the intensity and excitement of it hook you like a bad habit. Now, I would spend six hours a day working on the project if I could."



Glen Templeton and the students make some minor adjustments to make sure their robot performs at maximum capacity in the competition. Creating a new design and seeing it come to life was one of Templeton's favorite parts of working with the robotics program.



What is it about this program that is so addicting? For most involved it was the competition against the robots built by rival schools. "At the competitions you have it all! The excitement of the game, the thrill of victory, the agony of defeat, solving problems and keeping things going as the contest proceeds. The competition events are where all of the hard work, energy, brain power, and sweat of the six-week-build-time really get exercised and the whole meaning of the project is brought to fruition," Pogany said. Hetrick agreed, "Even though we are probably just a bunch of robot geeks congregating in mass, the competitions have the feel of a sporting event so I find them entertaining and exciting, especially when our robot is on the floor."

"A mentor said that it is very addictive...he comes back year after year. I'm looking forward to seeing how much of an impact these next intense six weeks will have [on me]," she says. Indeed, the program has impacted not only the future careers of the students involved, but the current careers of the NVESD engineers. Hetrick says, "I think the best thing I've gotten out of the experience is new friends. I've met and gotten to know some people in the lab that I might not have otherwise." Pogany agrees, "I have established many new personal contacts within NVESD which I call upon and use in my daily job often. I have also learned about the many wonderful capabilities NVESD has in the rapid design and fabrication of prototype hardware for robotic systems."

Without the assistance of these dedicated NVESD employees, Hayfield's participation in the FIRST program may never have occurred. Their hard work has even inspired ten alumni of the program to return to Night Vision as employees. The expertise and knowledge the engineers share with the kids have opened their eyes to new career possibilities. And maybe someday their influence will bring these students back to the Night Vision laboratory where it all began.



A group of students huddle around intern Andy Hetrick as he shows them how to put a piece of the robot together. While the students learned a lot from the engineers, the engineers learned some things from the students as well.

NVESD helps a second team get to FIRST

Marna Palmer
NVESD, RDECOM

The Night Vision and Electronic Sensors Directorate, is involved with the FIRST Robotics contest. Denis Cushman, of Network Support Branch, has found another way he can use the knowledge and skills he cultivated at the laboratory to help students. Cushman is involved with the Rappahannock Robotics Competition team. Rappahannock Robotics is made up of about forty five students from schools across King George, Spotsylvania, and Stafford counties in Virginia. Students and parents involved with the organization go into the community to find their own support, both technical and financial. This is where Cushman comes in. His son joined the team six years ago when he was a freshman in high school. Cushman became involved and enjoys it so much that he continues to work with the program.

Cushman's involvement with the team is in the position of mentor. "I print posters for them, I help build the robot...whatever they need me to do," he says of his responsibilities. This is not a role that Cushman takes lightly; he spends up to twenty hours per week working with the students. This is in addition to his forty plus hours a week working at the lab. Cushman's passion for the project echoes that of the engineers working with Hayfield.

When asked what drives him to devote so much of his free time to the project Cushman replied, "I like helping the kids learn about building the robots, from the beginning to the end," he says. He has also learned a thing or two from the students he has worked with, "The kids have some pretty wild ideas that sometimes work," he says.

Cushman hopes that these wild ideas will pay off where it really counts: in the competition arena. NVESD wishes both Rappahannock and Hayfield the best as they go head to head. May the best 'bot win!, he said.

Right technology proves limitless capabilities at AUSA

By Larry D. McCaskill
RDECOM Public Communications Office

During a recent address to participants at the Association of the United States Army's Winter Symposium, Ft. Lauderdale, Fla., Brig. Gen. Roger A. Nadeau stressed the importance of moving beyond boundaries that limit creativity and progress.

"It is all about putting the limited resources you have into the right person's hands to be applied towards the right technology that has the most payoff," said Nadeau, commander, U.S. Army Research, Development and Engineering Command.

Military research and development within the Army is not limited to staying within Army channels Nadeau said. As a relatively new headquarters, Nadeau said the command was built by consolidating existing research and development centers under a single headquarters. The pay off, he said, is better synergy between Army research and development centers as well as closer ties to national laboratories, other services and elements within the Department of Defense.

"We [RDECOM] work arm and arm with Future Combat Systems because we populate just about every working system they have. We align closely with the Rapid Equipping Force through our Agile Development Center out of the Systems of Systems Integration Office at Fort Belvoir. We work closely with the Task Force IED. None of this is about competition. It is not about who gets the credit. It's about getting the right technology into the hands of the warfighter as quickly as possible. Anything else is inefficient and unacceptable.

According to Nadeau, military researchers need to ensure that they are joint in their focus because that is the way it has to be.

"Before, you had to work real hard to be 'joint.' In the environment that we've worked in during the last several years, you'd have to work real hard at not being 'joint.

"How can you talk about the new Army approach of Systems of Systems and bind it to the outer edges of the Army? It has to embrace technology options available to the Army from the other services as well as international sources of technology," Nadeau said.

Constantly challenged by the cost of leading edge technology, Nadeau asserted, military researchers need to stop taking it personally when Army projects are cancelled. Choices have to be made. We have to adjust our funding to projects that match our priorities. Sometimes, projects that are progressing according to plan must be either adjusted or terminated in reaction to changing priorities. Project leaders must not take that personally.

"We no longer let projects linger in research and development centers until the money dries up. We identify those projects that no longer align with Army top priorities and alter or terminate them while there's still money left in those projects so we can use the funding elsewhere.



Staff Sgt. Stuart Waugh, ARDEC, Picatinny Arsenal, N.J., left, demonstrates some of the TALON/SWORD'S capabilities to RDECOM Commander, Brig. Gen. Roger A. Nadeau, at the AUSA Winter Symposium in Fort Lauderdale, Fla., recently. (Photo by Larry D. McCaskill)



To ensure the higher priority projects are identified, Nadeau said his command works with the program executive offices and project managers to match priorities as well as taking cues from Army leadership in order to balance investments between current and future Army.

"RDECOM works very closely with TRADOC (U.S. Army Training and Doctrine Command). At the senior Army level we are informing the leadership as to what type of technologies we are trying to pull in faster so that between them, if someone thinks we've invested in the wrong directions we can pull it in before we get too far out. The process is not perfect but it is better than it was a year ago," he said. "And it's getting more efficient every day."

TARDEC/local school team up on robotics

By Paul D. Mehney

Often described as the “ultimate mind sport,” the design and piloting of remote controlled robotics is becoming much more than just a Discovery Channel television show. Since the first of the year, U.S. Army TARDEC, has worked hand in hand with a group of innovative students from Birmingham, Michigan, Groves High School to design and build a state-of-the-art competitive remote controlled robot.

Part of the FIRST (For Inspiration and Recognition of Science and Technology) Robotics Competition, the Groves team and their TARDEC mentors worked to solve a common problem in only a six-week time frame. Given a standard kit of parts and a common set of rules the students, with technical guidance and sponsorship from TARDEC, were challenged to build a remote controlled robot capable of quickly navigating an obstacle course, lifting objects and placing them onto a standing target. The robot must complete this while being physically challenged by competing robots on the same course.



Students pose in front of their remote controlled robot.

A total team effort was underway in January and February to build the robot. Groves’s students worked endless hours to fabricate and perfect the robot’s electronics, drive train, engines and body. TARDEC provided design oversight and rapid prototyping of certain robotic body hardware. After completing several successful dry runs, the robot was ready to ship on schedule February 22. The first regional competition was set to begin one month later.

The enterprising students did not sit idle for the month preceding the competition. They built a second robot for practice. Using a course set up at the high school, the team under the watchful eye of their teacher, Steve Liggett and TARDEC mentor Jack Jones put the practice robot through every scenario imaginable. As the competition drew closer, adjustments that could be made were noted and anticipation grew.

March 18, students of the Groves team assembled at the 2005 Detroit Regional FIRST Robotics Competition at Wayne State University. There they competed against more than 33 region teams; many sponsored by such companies as Ford, Delphi, General Motors and DaimlerChrysler. The Groves robot had to be easy to control, stable and strong to make it in what Jack Jones called, “the most gut wrenching rounds I’ve ever seen.”

After a day and a half of spirited three-on-three matches and with dignitaries such as U.S. Senator Debbie Stabenow present to show support, the Groves/TARDEC team finished the qualifying rounds as a fourth seed. They and their two alliance partner teams went into the semifinal round as a favorite, but due to a rule violation by one of the partners, finished with a disappointing elimination.

The team now plans to take on more competition, according to Liggett; “We plan to compete again in Michigan later this month and possibly at the national competition in Atlanta. But all this could not have been possible without dedicated students, supportive parents and the expertise TARDEC provided. It has been a winning situation for everyone involved. These kids have gained valuable real-world experience out of this program.”

TARDEC considers the FIRST Robotics events an essential part of its outreach program and in addition to helping the Groves team, was a sponsor of the Detroit regional, provided a judge and referee for the event, and will also provide a judge to the National event in Atlanta. The level of success of the TARDEC projects over the last two years, has led the participants to believe this program is achieving exactly what it set out to do. TARDEC engineer Teresa Gonda, a regional and national judge says, “Through



this program, kids in high school have begun to think of science and technology as exceptionally cool and they have become inspired to think in terms of careers in these fields. This is great for them and encouraging for the future of our country.”

U.S. Army, UK join technology forces for future battlefield

ARL Public Affairs Office Press Release

Success in future warfare will greatly depend on an Army's capability to quickly gather, interpret and share battlefield information. This is even more critical in coalition operations which require coordinated actions between forces from different nations that may use different technology and doctrine.

Realizing the need for cooperation to solve the technology challenges involved in conducting coalition operations in network centric warfare, the governments of the United States and the United Kingdom are forming an International Technology Alliance in Network and Information Sciences.

As the organizations implementing the Alliance, the US Army Research Laboratory and the UK Ministry of Defense conducted two "Opportunity Conferences" for industry and academia, one in Vienna, Virginia on April 1, and the other in London, April 7. The conferences were to prepare industry and academia consortia from both nations to develop proposals to participate in the ITA program.

The intention is to form a consortium of government, industry and university scientists and engineers from both nations to develop the advances in technology that will link battlefield capabilities of networks of sensors, command and control, and soldiers during tactical coalition operations. This coupling of networks, communications and information sciences, integrated into a coherent whole, is a critical part of network-centric warfare.

The ITA program will be funded for a total of up to \$70 million over five years. Options could extend that up to an additional five years and additional funding of \$70 million or more.

Fundamental research will be sought in network theory, security across a system of systems, sensor information processing and delivery, and distributed coalition planning and decision making. The ITA also provides for transitioning research results for military and commercial use.

The ITA is modeled on ARL's Collaborative Technology Alliances as well as MoD's Defense Technology Centers. The highly successful CTAs use cooperative agreements which permit the Army, academia, industry, and other government agencies to share resources, personnel and results for joint research projects.

Defense Technology Centers are formal collaborative arrangements between industry and academic experts in a particular technology, defined and funded jointly by participants and the MoD.

The ITA program is limited to US and UK entities. The consortium must have both US and UK membership with a strong emphasis on collaboration among the members. Potential consortium leads must have a significant research and development capability in both the US and UK.

Friday the thirteenth brings promotion for Col. Brown

Trinace Johnson
RDECOM Public Communications Office

On what normally is a superstitious day for bad luck, in a standing room only ceremony at the Edgewood Conference Center, Col. R. Mark Brown, deputy commander, Systems of Systems Integration, U.S. Army Research, Development and Engineering Command, was promoted to brigadier general, Friday, May 13.

The Honorable Claude M. Bolton Jr., Assistant Secretary of the Army Acquisition, Logistics and Technology and Lt. Gen. Joseph L. Yakovac Jr., military deputy to the Assistant Secretary of the Army for Acquisition, Logistics and Technology, along with Brown's wife and parents were there for the promotion

"We put a lot of trust, responsibility and faith into a general officer... and he [Brown] can do the job that has to be done," Bolton said. "It's a day to celebrate a great Soldier and great leader."

Yakovac advised Brown that there would be greater expectations on him as a general. He told Brown to be himself, remember where he came from, take care of the needs of Soldiers and always try to find balance in his life.

"Remember who you are and what brought you here. Don't change, just adapt," Yakovac said.

Brown thanked God, his wife Mary and parents, Robert and Florence for getting him to the point where he is now in his life.

"This is a very humbling honor that has been bestowed on me. I promise to work hard everyday and safeguard Soldiers," Brown said.

Brown is a 1977 graduate of the United States Military Academy at West Point, New York. The 28-year Army veteran is responsible for quickly placing the right technology into the hands of war fighters and integrating research, development, and engineering across the entire spectrum of the Army's technology base including; Army laboratories and research development and engineering centers, Department of Defense laboratories, universities, industry, sister service, ally and foreign service, and other science and technology sources.

Brown received a Masters Degree in Systems Engineering from Virginia Tech University in 1989. His military decorations include the Defense Superior Service Medal, Legion of Merit, Defense Meritorious Service Medal, Meritorious Service Medal (with five oak leaf clusters), Joint Service Commendation Medal, Army Commendation Medal (with oak leaf cluster), Army Achievement Medal, Joint Meritorious Unit Award (with oak leaf cluster), and the Army Staff Identification Badge.



Lt. Gen. Joseph L. Yakovac Jr., left and Robert Brown, the newly promoted general's father, far right officially pin on Brown's star at his promotion ceremony Friday, May 13. (RDECOM photo by Michael Barnette)

ECBC employees receive standardization award

ECBC Public Communications Office

Dr. George Famini, Robert Moeller and Cecelia Ball of the Edgewood Chemical Biological Center received the 2004 Defense Standardization Program Award March 11, 2004, for their efforts supporting the American, British, Canadian, and Australian Armies' Quadripartite Working Group on Nuclear, Biological and Chemical Defense.

ECBC has been engaged in standardization and interoperability efforts with the United Kingdom, Canada and Australia and New Zealand for more than 20 years. During this period, more than 100 quadripartite standardization agreements have been developed, written and implemented. Over the past two years alone, the ABCA armies have implemented over 10 new or modified QSTAGs, and 58 QSTAGs have been ratified on material, criteria or procedures to date. These agreements ensure interoperability and commonality of equipment among the ABCA forces. The benefits are being realized through enormous cost savings in all of the armies as well as in increased operational readiness rates for every deployed warfighter.

In the mid 1980s, ECBC assumed the role of National Point of Contact and provided experts in all areas of NBC defense to serve in a variety of roles, including the head of the United States delegation. The Center's participants have led the quadripartite group towards planning appropriate work and achieving objectives that will make a difference on the battlefield. ECBC representatives ensured that the equipment side of commonality, interchangeability and interoperability was always addressed in concert with the discussions on doctrine, procedures and protocol.

Although this effort has been aimed at interoperability and commonality among the ABCA Armies, several activities originated under the QWG and NBC defense have been expanded to include interoperability among all NATO nations. These QSTAGs and this program have had a profound impact by ensuring common approaches and practices among the ABCA armies in all coalition operations, including operations other than war and the global war on terrorism.

ECBC Advances Mass Spectrometry

The Direct Analysis in Real Time is a new technology used to analyze liquids, solids and gases in open air within seconds, without sample preparation.

This technology, developed under ECBC's Agent Fate program, uses a heavy-helium microjet to impact and eject surface molecules from an object, feeding directly into a mass spectrometer to analyze the vaporous sample. During testing, DART successfully sampled hundreds of chemicals, including chemical agent, on a variety of surfaces.

DART does not alter the sample and provides real-time data in seconds. This is a substantial improvement over the standard technique, which involves heating the surface, capturing the off-gas, and analyzing the off-gas by Gas Chromatography-Mass Spectrometry.



ECBC Employees pose as they Receive Standardization Awards.

ARL's Nietubicz named a Fellow by AIAA

By ARL Public Affairs

Charles J. Nietubicz of the Army Research Laboratory has been named a Fellow of the American Institute of Aeronautics and Astronautics.

The AIAA recognizes as Fellows individuals of distinction in aeronautics or astronautics who have made notable contributions to the aerospace arts, sciences, or technologies.

Nietubicz is Chief of the High Performance Computing Division, Computational and Information Sciences Directorate, and also serves as Director of the DoD/ARL Major Shared Resource Center at Aberdeen Proving Ground, MD.

He has a combined experimental and computational background in projectile aerodynamics and high performance computing that spans over 33 years. His work in computational projectile aerodynamics includes development and application of Navier Stokes codes, which began during the early development of vector supercomputers. Nietubicz was a leader in the development of computational fluid dynamics as applied to projectile configurations. His work in this area has been referenced on the national and international level.

As chief of the High Performance Computing Division, he has management responsibilities for 220 employees and an operating budget of more than \$60M. His Division has technical responsibility in areas of scientific computing, computational science and engineering, networking, system administration and information assurance. Nietubicz coordinates and manages the ARL participation in the DoD High Performance Computing Modernization Program and serves on DoD, Army, Army Materiel Command, American Institute of Aeronautics and Astronautics, and ARL boards, committees, working groups and on technical evaluation panels. As director of the DoD/ARL Major Shared Resource Center, Nietubicz carries out coordination and program management initiatives both within the Army and with DOE, NASA, and NSF. He participates in international activities involving high performance computing such as Europort, the Technical Cooperative Program, HPCAsia and data exchange agreements.

Nietubicz earned Bachelors and Master's Degrees in Mechanical Engineering from the University of Dayton in 1969 and 1970, respectively. He was commissioned a second lieutenant in the Army Ordnance Corps and assigned to the Ballistic Research Laboratory, an ARL predecessor, as a wind tunnel program engineer.

In his tenure with ARL, he has also served as acting director of the Corporate Information and Computing Center from June 1998 to May 1999 and as acting Deputy Director of CISD from August to December 2004. His duties included service as the acting Corporate Information Officer for the Army Research Laboratory during the same time period.

Nietubicz has over 150 publications and presentations in the areas of computational aerodynamics, high performance computing, and scientific visualization. He has been a keynote speaker at a number of technical conferences, at universities and at West Point. He has received two Army Science Research and Development Achievement awards, the bronze medal for achievement at the Army Science Conference, the Army Superior Civilian Service Award and the Army Meritorious Civilian Service Award.



Charles J. Nietubicz

Civilians make a difference in Iraq

By Kim Polk

Communications-Electronics Research, Development and Engineering Center

Fort Monmouth, N.J. - Each day we wake-up to the images and stories in Iraq. When we turn on the news, we see car bombs, gunfire, missiles, violence and destruction. We witness smiles of Iraqi children and selfless service from our military men and women. Many of us catch ourselves asking the questions that most of us cannot answer. What is it really like to be in Iraq; is it truly that dangerous? How does one protect himself from missiles, gunfire, and bombs? Can we help or make a difference? What is it like to live in those conditions, and do the images we see on TV really reflect the whole situation over there?

Butch Wentworth, from the Special Products and Prototyping Division can tell you all about it. He volunteered for a six month tour in Iraq that started in December. To start his adventure off, Butch took what is not your every day training class and trained for the conditions that he would be living in. I recently interviewed Butch and not only did I get answers, but I was inspired by his willingness to take a chance, his loyalty to the soldiers, and his dedication to the mission. Guess what? He is making a difference.



Butch Wentworth

1. Tell us what made you decide to go to Iraq considering the danger involved?

Everyone asks that question. With me it makes me feel like I make a difference to the troops. I think everyone wants to support our troops in one way or another. We all do it in different ways. I prefer to have a face to face interaction with the troops.

2. You were trained at Fort. Bliss; what did that involve? Shots, lots of shots. You get a medical and dental exam. You attend lots of briefings that get you prepared for what it is like in Iraq. You learn about the different religious parties and their customs. You take classes on battlefield first aid consisting of treating wounds from bullet, shrapnel, burns and chemical contamination. It's not your everyday first aid. You are issued three duffle bags worth of clothing, a sleeping bag and Kevlar/body armor.

3. Were you trained to protect yourself? Just common sense stuff like keeping your head down. They teach you how to use a chemical protection mask. You get a Force Protection briefing that is geared on the threat here in Iraq.

4. Do you carry a weapon? I'm authorized to carry a weapon but I prefer not to. I have 20,000 heavily armed soldiers around me so I don't feel the need for one. When I go to the Forward Observation Post (FOB) then it's a different story. I might consider it depending on the threat. I have qualified on the 9MM and the M16 here in Balad.

5. Once you arrived in Iraq, how did you get to your work site? Mr. Don Mumma picked me up at the Balad airport. He works out of the Army Materiel Command HQ building as the CECOM Senior Command Representative (SCR). He gave me a quick tour of the base and introduced me to various Commanders and their staff. He gave me keys to my vehicle and office. Basically, my first day was meeting all of the Forward Repair Activity (FRA) personnel. They are who I came here to manage.

6. Are you protected? Yes

7. What is the average temperature in Iraq? At night it gets real cold. Last night we woke up to ice on the ground. During the day when the sun is out it gets about 65-70 deg F as long as the sun is out. It's the rainy season here and when it rains it makes a big muddy mess.

8. What are the conditions like where you work? It's noisy. We are powered by generators and they run 24 hours a day, 7 days a week. We are next to the Air Force runway and it is pretty active here. When F-16's take off they are extremely loud and they shake my office building. The dirt gets into everything. It's like talcum powder. It gets in your hair, nose and clothes.

9. Tell us about your average day in Iraq. I live and work out of my office. I am the only one who lives on the FRA compound. Everyone else lives across the street in personnel trailers. I prepare a pot of coffee at 7 a.m. and start reading and answering my emails. I am responsible for the daily personnel accountability which I report to our S1 by 8 a.m. I am responsible for keeping this place operational. I think I am the complaint department. I can authorize on the spot repairs to some unsupported items, such as repairing a broken cable. The FRA personnel that work here are 100% supportive to the soldiers' needs. Balad receives mortar and rocket attacks about 3 days a week. After each attack I am responsible for conducting personnel accountability and report it to the S1 within 15 minutes after the all clear is sounded. I have personnel in Mosul, Tikrit, Balad and Baghdad. I am currently preparing the FRA's in Balad, Tikrit and Baghdad for growth in personnel and mission support. That includes making work/office space and life support for additional personnel. My typical day starts 7 a.m. and ends at midnight.

10. Are you allowed to travel within Iraq? The only way to travel is by military convoy or by air. There are no safe areas in Iraq so traveling is for business only. I've been to Tikrit once since I've been here.

11. Tell me about your living conditions. Eating, sleeping, working? The dining facility food is good. I am comfortable with my work space and sleeping quarters.

12. When you are not working what kind of recreation, relaxation, TV, movies, are available? Yeah right! Although the Morale Welfare and Recreation (MWR) are available for us to use, there really isn't any time. They have pool tables, game rooms, a library and a movie room. They also have karaoke on some nights. There is a Burger King, Pizza Hut and a Subway here. I haven't had time to visit yet. I do have TV and I can receive CNN and ESPN from the Armed Force Network (AFN).

13. Are there shops close by for personal purchases? Yes there are a few shops on base that you can buy souvenirs from.

14. What is the best thing you can think of about Iraq and what is the worst? Sounds like a political question here. I don't want to talk about politics. It's best left to our politicians. I do think that most Iraqis wanted a change here. The worst thing is watching the medic-vac helicopters fly over head. The main hospital in Iraq is here at Balad.

15. Do you hear explosions constantly? All the time. We hear incoming, outgoing and controlled explosions.

16. Do you only wear BDU's? No I wear underwear and boots too.

17. If you could have anything you wanted that you can't get in Iraq, what would it be? Starbucks coffee beans, door mats, 4 by 5 feet carpets and stiff bristle cleaning brushes. We track a lot of mud into our office areas.

18. If you get sick, what process do you go through to see a doctor or get medicine? We just need to go to sick call.

19. How has this experience changed your life? It won't really change my life. I know what I am doing and why I am here. I knew what to expect before I came here.

20. Is there anything you would like to add? AMC is looking for volunteers to come here. If you sign up to come here, be prepared to deal with all I talked about. The danger is real and the hours are long. The reward you get is the satisfaction of making a soldier's day a little better.

Gunfire detection system protects troops, garners award for ARL scientist

By Paul Schmitt
ARL Public Affairs Office

Soldiers have a tough job to do in Iraq, but Army civilians are doing their part to help. One civilian, an Army Research Laboratory engineer, was recently honored for the important role he played in testing and managing the deployment of a crucial technology to help protect soldiers from enemy fire.

Scott Miller, an engineer in ARL's Sensors and Electron Devices Directorate, was awarded the 2004 Office of the Secretary of Defense Government Civilian Tester of the Year by the National Defense Industrial Association for his work on the Gunfire Detection System, a countermeasure against snipers.

The GDS is a small acoustic sensor system that provides relative range, azimuth and elevation of gunfire. It can be deployed either as a fixed site system, or mounted on a vehicle.

"This is the first gunfire detection capability that has been put into the U.S. military inventory," Miller noted.

The system was transitioned from technology already patented by a French company, Metravib. Referred to as PILAR in France, it was purchased for military use by Army elements, with an identified need for gunfire detection capability. Through the Comparative Test Office, Miller helped transition the technology into the hands of U.S. soldiers.

During this process, Miller helped test the technology in a variety of environmental and battlefield conditions, including snow, tropical, urban, and open field. Tests were conducted at several sites in Alaska, Florida, and Maryland.

Explaining the impact of the technology, Miller noted "when you hear gunfire, you're likely to hear several sounds and reflections of those sounds. The GDS narrows the uncertainty of the origin of that shot from 360 degrees to just 5-10 degrees."

Narrowing the possibilities of the shot's origin would allow a Quick Reaction Force to get to the sniper before he gets away.

"This is a significant step forward in protecting our troops from enemy fire," Miller added.

Miller's contributions were not confined to testing the GDS in the United States. He also delivered the GDS to the Middle East with a New Equipment Training team, which provided guidance to soldiers who were equipped with the newly-available system. During his three-week stay, Miller quickly learned the need to acclimate to the less-than hospitable conditions.

"At first, there is a general feeling of a lack of safety," he said. "But you quickly get used to it – you have to in order to get your job done."



Scott Miller



Training sessions were conducted as part of the transition. Miller's trip to the Middle East was a crucial aspect of his nomination package for the NDIA award.

The NDIA Tester of the Year Awards are presented annually to civilian and military personnel supporting all of the military services. An award is given to the outstanding defense civilian, military, and supporting contractor from each of the armed forces branches.

CERDEC engineer catches more than one type of wave

By Desiree DiAngelo
CERDEC Public Affairs

It was a beautiful day, as light streamed into the office. It was a fitting office, open, airy and bright. The desk was neat and organized, speckled with stacks of paperwork, military paperweights and of course pictures of grandchildren. On the starch white wall hung a rather unique sign, "gone surfing," which appropriately belongs to Joe McGowan, an interesting man by all accounts.

McGowan rejoined the civil service three years ago after working in the private sector for 15 years. He is an Electronics Engineer in Communication- Electronics Research, Development and Engineering Center in the Positioning, Navigation and Timing Branch.

Throughout his career as a navigation engineer, Joe has specialized in Global Positioning Systems and inertial navigation. One of his many accomplishments was the development of a navigational system for the GUARDRAIL aircraft. This aircraft needed precise velocity measurements to perform its mission and at the time of its development, it had the highest accuracy of any other fielded army platform of its type.

McGowan's current focus is to protect GPS against interference. GPS can get jammed much like any other radio signal. Therefore the department works diligently to understand this occurrence and develop new technologies to offset it. Additionally, McGowan and his department have developed a very high fidelity navigational modeling and simulation capability. "It has been used for years by the Army to understand GPS jamming and what techniques may help us overcome that," he stated

Paul Olson, Chief of PNT Branch in CERDEC, applauds Joe as technically competent and an independent thinker. "Joe's a team player; he's supportive of all our efforts, and bottom-line - a valued asset in our branch," he stated.

A resident of Toms River, McGowan lives with his wife Donna; whom he boasts is "his biggest cheerleader." He is a proud parent of three children, and an even prouder grandfather to baby Shane and the newest addition, granddaughter Julia. However, amongst his many hats, Joe is also an avid surfer. In fact, he has been surfing for more than 35 years.

Beginning as a young teenager, Joe's passion for surfing has remained a constant for most of his life. Even before he moved to the Jersey shore at 16, McGowan said, "my friends and teachers all thought I was crazy. Here we were in the hills of North Jersey, miles from the nearest beach and I hung out with my friends wearing crew-necked shirts with surfer stripes and baggy knee length shorts while they were wearing paisley and madras sport shirts and cut off Levi's jeans. They'd talk baseball, football, etc. I'd talk surfing," McGowan reflected.

While there was a ten-year period where the demands of his career kept him away from surfing, "That was a long time ago," he said, "I'm back now and I'm sure that I'll be surfing for the rest of my life." It is during this second surfing "career" that his passion took on a whole new direction.



CERDEC engineer, Joe McGowan, shoots a curl off the New Jersey Shore.



CERDEC engineer catches wave.



McGowan's overall knowledge of surfing has led him to be regarded as a local expert; some New Jersey papers use him as a source when certain events and weather conditions related to surfing arise. His enthusiasm for surfing also led to the creation of a website in 1999. Originally, it served as Joe's one-stop personal site to attain the latest weather and beach conditions. However, the site gained exposure, and by 2002 it was assisting over one thousand surfers in the area.

Now five years later the website (www.JoeMac.net) is still maintained by Joe and is actively used by area surfers who log thousands of visits each day. Some of those visitors include other CERDEC employees. Mike Vincelli, for example, is a Computer Science Specialist in CERDEC who finds the site very useful. "The surf cams and the marine forecast are great tools for surfers," he remarked.

Although a seasoned expert at the sport, McGowan still finds it difficult to explain its allure. "I guess, no, it is a feeling of accomplishment. You are harnessing energy from a wave that has traveled from who knows where to get to you. Like any other athletic achievement; it just feels good to do it well," he concluded.

Surfing is a sport and a lifestyle that requires extremely physical hard work yet is tremendously satisfying. "Surfing forces me to stay in shape and keeps me healthy," he said. He is confident that surfing will be an integral part of his life well into retirement. [Surfing] "It provides me with a separate center for my pursuit of happiness, independent of career and success. So you see it's like I said, I'm gonna be alright as long as I keep catching waves."

Tanks gain awareness

By Marna Palmer
CERDEC Public Affairs

For Dr. Jean Fortin, January of 2004 was not only the start of a new year, but the start of a new life. Fortin arrived at the US Army Research, Development and Engineering Command's Communications-Electronics Research, Development and Engineering Center's Night Vision and Electronic Sensors Directorate to work for a year at an American laboratory. Fortin was the latest participant in the Engineer and Scientist Exchange Program, which facilitates the exchange of information and ideas between foreign governments by sending Americans to work overseas, and inviting foreign scientists to work in laboratories in the States. Dr. Fortin came to NVESD from Valcartier, a laboratory of the Defence Research and Development Canada organization.

Dr. Fortin joined forces with the Manned Vehicle Sensors effort at NVESD. He had high hopes for his year at the laboratory, "I was expecting to meet the best scientists in the world in the field of infrared sensors and imaging. I was also expecting to develop relations within the US scientific community in order to guide my future work and make sure it is relevant to both countries."

To meet this goal, Fortin worked closely with many of the engineers and scientists at NVESD to develop the Distributed Aperture System. Their goal was to create a system for infantry carriers that would increase situational awareness. In his farewell briefing, he explained, "Current armored personnel carriers, when enclosed in a protective posture, do not have acceptable situational awareness. This system helps address that problem." The prototype that Dr. Fortin and his colleagues developed met and exceeded the initials specs they had outlined and Dr. Fortin was able to witness its integration onto a HMMWV.

While Fortin worked hard and made significant achievements in his professional life, he made sure to take the time to appreciate all that the Washington D.C. area had to offer. He became quite the outdoorsman during his time in the States. "Nature here is very different from Canadian nature. I enjoyed quite a lot of kayaking on the Potomac River, exploring the many creeks and looking at the wildlife," he said. Prior to this experience he had lived all of his life in Quebec and while in the States he took advantage of every opportunity to travel. He says that now, "I have seen more of the US east coast and west coast than the Canadian ones."

To Dr. Fortin, even more impressive than the forests and coasts of the United States were the accomplishments he and his team achieved. In the short time he was here he saw the goals he had set for himself realized, "My expectations were met completely. We built a team of US scientists and contractors and proposed a solution to solve one of the most challenging problems met by US and Canadian troops in their day-to-day operations." This collaboration will continue to benefit both NVESD and Valcartier. When he returns to Valcartier, Dr. Fortin will continue the work he began at NVESD, and share with his colleagues the things he learned from his American counterparts. Likewise, NVESD will continue to use the work of Dr. Fortin in the fabrication of the Distributed Aperture System. This relationship typifies the goals of the ESEP program and expands the knowledge and capabilities of all parties involved. That, in turn, helps both governments to better equip their Soldiers; a goal that bridges any cultural gaps.



Dr. Jean Fortin surmises his year at NVESD in a farewell briefing given days before returning to his home in Quebec, Canada.

RDECOM reaches out to Black engineers

Larry D. McCaskill
RDECOM Public Communications Office

Members of the U.S. Army Research, Development and Engineering Command research centers and laboratories converged on the Hynes Convention Center exhibition hall floor as part of the National Society of Black Engineers' National Convention outreach program. One of 325 different organizations represented, RDECOM employees discussed the possibility of government careers with attendees. More than 9,350 people attend this year's convention.

"We attend these conventions and conferences looking to provide information to college students who may have an interest in applying their trade with the government," said Dr. Vallen L. Emery Jr., RDECOM minority Outreach Program Manager. "We want to ensure that these talented individuals know that there is more than one way to serve their country."



Dr. Vallen L. Emery Jr., RDECOM minority Outreach Program Manager, looks on as a fellow RDECOM employee discusses the merits of the command with a convention attendee at the National Society of Black Engineers annual convention in Boston, Mass. (Photo by Larry D. McCaskill)

Soldier innovations sought

The Soldier Innovation Initiative is seeking resourceful equipment ideas from Soldiers who have served in Operation Iraqi Freedom and Operation Enduring Freedom.

The Natick Soldier Center's Operational Forces Interface Group at the U.S. Army Soldier Systems Center here began the effort in January 2004 to capture Soldier-modified equipment in the field as well as identify new equipment made from materials available to Soldiers that they have creatively exploited.

The project's goal is to discover successful field ideas, prototype the best ones for further evaluation, and potentially influence the development process to field new or improved equipment. Ideas are reviewed to determine which technical area within the Natick Soldier Center or Research, Development and Engineering Command can best assess the innovation.

OFIG members, consisting primarily of active-duty and former Soldiers, visit installations throughout the year for the purpose of gathering field feedback, and the Soldier Innovation Initiative piggybacks onto these installation visits to specifically target installations with units returning from Iraq and Afghanistan.

OFIG has been in the business of collecting field feedback for 20 years and has three engineering psychologists who specialize in the development of surveys and in interpreting field feedback. The psychologists developed a survey designed to prompt Soldiers to provide their innovations, creative modifications, field solutions, and newly created or improvised items while deployed.

Soldiers are asked not only to provide information on their ideas but also to provide digital or hard copy photographs to enhance understanding of their ideas. Soldiers are also prompted for contact information so that they can be reached for further clarification.

Project officers conduct a review to determine whether the idea merits further pursuit. They are encouraged to contact the submitter and even invite him to the NSC if this will aid in the prototyping and evaluation process.

After an initial survey round with 2nd Battalion, 27th Infantry, Schofield Barracks, Hawaii, and units of the 82nd Airborne Division deployed in Afghanistan, some ideas that have emerged are: map pocket sewn into the inside of a patrol cap, a modified sling that allows the M-4 carbine rifle to hang in a ready position, a commercial earpiece for Soldier Intercom for better integration with helmet and golf bag straps attached to M-240B assistant machine gunner's bag to carry the weapon in a ruck configuration.

The NSC believes that the Soldier Innovation Initiative features important differences in process and scope from the Army Ideas for Excellence Program because the initiative employs OFIG to actively solicit creative ideas and solutions from returning combat veterans.

Soldiers whose ideas are determined to be fitting within the Army Ideas for Excellence Program also will be encouraged to do so through this process.

OFIG will continue to solicit ideas from returning units, providing continual new ideas for assessment and possible further development and fielding.

For more information visit <http://www.natick.army.mil>, or call (508) 233-5340.

Restoration Advisory Board meeting held

The Restoration Advisory Board for the U.S. Army Soldier Systems Center held a meeting for March 24, at 7 p.m. in the Recreation Center (former Officer's Club).

The meeting opened with a review of the minutes from the November 2004 meeting and continued with a period for general comments. The topics were Draft Removal Action Work Plan for Buildings T-2 & T-68; Draft Removal Action Work Plan for Building 14 and Former Building 13; and FY-2006 Site Ranking Briefing. A public comment period was the last scheduled topic on the agenda.

The RAB plays an active role in the Soldier Systems Center's environmental efforts by reviewing technical reports and aiding in the development of cleanup strategies.

RAB membership is composed of local citizens, Army personnel, and officials from the Environmental Protection Agency and the Massachusetts Department of Environmental Protection.

The meeting was opened to the public.

For more information about the Soldier Systems Center, please visit our website at <http://www.natick.army.mil>.

M7 pedestal fulfills need for increased convoy protection

The U.S. Army Tank-automotive and Armaments Command - Rock Island, Ill. is fulfilling a critical need for increased and improved offensive convoy protection with the new M7 pedestal.

The M7 pedestal allows Soldiers to mount the M249, M240B, and M2 machine guns and the M19 grenade automatic launcher in the open cargo bed of the M998 Cargo HMMWV.

The M998 HMMWV is one of the most common convoy vehicles, and troops in Iraq have been modifying its existing M6 machine gun pedestal. Soldiers moved the pedestal from its position in front of the HMMWV cargo bed to the rear position between the wheel wells.

This gave Soldiers a 360 degree range of fire instead of the 180 degree range when the pedestal is mounted in the front, but it also created safety and structural issues. To address these issues, the M6 needed to be redesigned to better meet the requirement. The result of these modifications evolved into the M7 pedestal.

The improved pedestal now extends the full width of the HMMWV aluminum armor plate that has alternate pedestal mounting locations and standard attaching points. It has a vastly ruggedized column support configuration to reduce potential tripping hazard, and strengthen support braces. There is also a depression stop which ensures safe zones of fire when aiming forward and prevents shooting into the cab area.

"We're very happy with the new M7 pedestal," said Sgt. 1st Class Robert J. Dixon, TACOM Material Fielding and Training Directorate, who has used both the M6 and M7 pedestals. "We now have more mobility and more freedom. We stay more focused on the mission."

FAST details of Iraq deployment



Dr. Ray Bateman, III Corps Army Science Advisor, far left, poses with fellow members of the Field Assistance in Science and Technology or FAST team, Maj. Juan Montoya and Dr. Patrick Linehan, in Fallujah, Iraq. Bateman recently spoke to RDECOM employees about his second Iraq tour where he served as the link between III Corps Soldiers and the materiel development community to address capability gaps and serving in Iraq from a science and technology perspective. Bateman said while he was deployed, he discussed many different concepts with fellow scientists and Soldiers. "If there is a crowd of people, and a suicide bomber is within that crowd, I want to know how I can identify exactly which person has got explosives," Bateman said. He also said that he worked with people on inventing better ways of identifying Improvised Explosive Devices and overall better protection of U.S. and coalition Soldiers. For more information on how to become a member of a FAST team contact Jim Gibson, fasthq@amc-fast.army.mil, 703-704-1486 or DSN 654-1486, or visit www.AMC-FAST.army.mil. (Courtesy Photo)